What is claimed is:

1.   1.   A system for determining a reference baseline of patient
2   information for automated remote patient care, comprising:
3   a medical device regularly recording and storing measures sets comprising
4   individual measures which each relate to patient information by a medical device
5   adapted to be implanted for an individual patient during an initial time period;
6   a database collecting one or more patient care records, comprising:
7   one or more patient care records which each comprise a plurality
8   of the collected measures sets;
9   a database module storing the collected measures set into a patient
10   care record for the individual patient within the database; and
11   a server, comprising:
12   a receiver receiving the collected device measures set from the
13   medical device adapted to be implanted;
14   an analysis module processing the collected device measures set into a set
15   of reference measures, each reference measure being representative of at least one
16   of measured or derived patient information, and storing the reference measures set
17   into the patient care record as data in a reference baseline indicating an initial
18   patient status.

1   2.   A system according to Claim 1, further comprising:
2   a remote client recording a set of quality of life measures during the initial
3   time period;
4   the database storing the collected quality of life measures set into the
5   patient care record for the individual patient; and
6   the server receiving the quality of life measures set from the remote client,
7   and assimilating the collected quality of life measures set into the reference
8   baseline data stored in the patient care record.

1   3.   A system according to Claim 1, further comprising:

2   the medical device adapted to be implanted monitoring the individual

3   patient while the individual patient is performing a prescribed set of timed

4   physical stressors during the initial time period.

1   4.   A system according to Claim 1, further comprising:

2   a programmer reprogramming at least one of pacing interventions and

3   pacing modes of the medical device adapted to be implanted during the initial

4   time period; and

5   the medical device adapted to be implanted monitoring the individual

6   patient subsequent to the reprogramming during the initial time period.

1   5.   A system according to Claim 1, further comprising:

2   a feedback recorder recording feedback from the individual patient during

3   the initial time period;

4   the database storing the recorded feedback into the patient care record for

5   the individual patient; and

6   the server receiving the recorded feedback from the remote client, and

7   assimilating the recorded feedback into the reference baseline data stored in the

8   patient care record.

1   6.   A system according to Claim 5, wherein the feedback recorder

2   comprises at least one of an audio recorder, a digital camera, or a video camera.

1   7.   A system according to Claim 1, further comprising:

2   a set of acceptance parameters stored within the database with each

3   acceptance parameter corresponding to the same type of patient information to

4   which at least one of the reference measures relates;

5   the server further comprising:

6   an evaluation module analyzing the reference measures set for

7   each patient care record against the acceptance parameters set; and

8   an acceptance module identifying each patient care record storing a

9   reference measures set having at least one reference measure substantially non-

10   conforming to the corresponding acceptance parameter.

1   8.   A system according to Claim 1, the application server further
2   comprising:
3   an analysis module analyzing one or more collected device measures sets
4   in the patient care record for the individual patient relative to the reference
5   measures sets in the reference baseline to determine a patient status indicator.

1   9.   A system according to Claim 8, the application server further
2   comprising:
3   the analysis module analyzing one or more of the collected device
4   measures sets in the patient care record for the individual patient relative to one or
5   more other collected device measures sets stored in the database to further
6   determine the patient status indicator.

1   10.   A system according to Claim 1, wherein each of the set of
2   reference measures is selected from the group comprising patient activity score,
3   posture, atrial electrical activity, ventricular electrical activity, cardiovascular
4   pressures, cardiac output, oxygenation, pulmonary measures, body temperature,
5   PR interval, QRS measures, QT interval, ST-T wave measures, potassium [K+]
6   level, sodium [Na+] level, glucose level, blood urea nitrogen and creatinine,
7   acidity (pH) level, hematocrit, hormonal levels, cardiac injury chemical tests,
8   myocardial blood flow, central nervous system injury chemical tests, central
9   nervous system (CNS) blood flow, and time of day and combinations and
10 derivatives thereof.

1   11.   A method for determining a reference baseline of patient
2   information for automated remote patient care, comprising:
3   regularly recording and storing measures sets comprising individual
4   measures which each relate to patient information by a medical device adapted to
5   be implanted for an individual patient during an initial time period;
6   receiving the collected device measures set from the medical device
7   adapted to be implanted;
8   collecting one or more patient care records into a database, comprising:

9   organizing one or more patient care records which each comprise a

10   plurality of the collected measures sets;

11   storing the collected measures set into a patient care record for the

12   individual patient within the database; and

13   processing the collected device measures set into a set of reference

14   measures, each reference measure being representative of at least one of measured

15   or derived patient information, and storing the reference measures set into the

16   patient care record as data in a reference baseline indicating an initial patient

17   status.

1   12.   A method according to Claim 11, further comprising:

2   receiving a set of quality of life measures recorded by the individual

3   patient during the initial time period ;

4   storing the collected quality of life measures set into the patient care

5   record for the individual patient within the database; and

6   assimilating the collected quality of life measures set into the reference

7   baseline data stored in the patient care record.

1   13.   A method according to Claim 11, further comprising:

2   monitoring the individual patient using the medical device adapted to be

3   implanted while the individual patient is performing a prescribed set of timed

4   physical stressors during the initial time period.

1   14.   A method according to Claim 11, further comprising:

2   reprogramming at least one of pacing interventions and pacing modes of

3   the medical device adapted to be implanted during the initial time period; and

4   monitoring the individual patient using the medical device adapted to be

5   implanted subsequent to the reprogramming during the initial time period.

1   15.   A method according to Claim 11, further comprising:

2   receiving feedback recorded by the individual patient during the initial

3   time period which is interfaced to the server;

4   storing the recorded feedback into the patient care record for the

5   individual patient within the database; and

6   assimilating the recorded feedback into the reference baseline data stored

7   in the patient care record.

1   16.   A method according to Claim 15, wherein the feedback comprises

2   at least one of audio, digitized imagery, or video feedback.

1   17.   A method according to Claim 11, further comprising:

2   defining a set of acceptance parameters with each acceptance parameter

3   corresponding to the same type of patient information to which at least one of the

4   reference measures relates;

5   analyzing the reference measures set for each patient care record against

6   the acceptance parameters set; and

7   identifying each patient care record storing a reference measures set

8   having at least one reference measure substantially non-conforming to the

9   corresponding acceptance parameter.

1   18.   A method according to Claim 11, further comprising:

2   analyzing one or more collected device measures sets in the patient care

3   record for the individual patient relative to the reference measures sets in the

4   reference baseline to determine a patient status indicator.

1   19.   A method according to Claim 18, further comprising:

2   analyzing one or more of the collected device measures sets in the patient

3   care record for the individual patient relative to one or more other collected

4   device measures sets stored in the database to further determine the patient status

5   indicator.

1   20.   A method according to Claim 11, wherein each of the set of

2   reference measures is selected from the group comprising patient activity score,

3   posture, atrial electrical activity, ventricular electrical activity, cardiovascular

4   pressures, cardiac output, oxygenation, pulmonary measures, body temperature,

5   PR interval, QRS measures, QT interval, ST-T wave measures, potassium [K+]

6   level, sodium [Na+] level, glucose level, blood urea nitrogen and creatinine,

7   acidity (pH) level, hematocrit, hormonal levels, cardiac injury chemical tests,

8   myocardial blood flow, central nervous system injury chemical tests, central

9   nervous system (CNS) blood flow, and time of day and combinations and

10   derivatives thereof.

1   21.   A computer-readable storage medium holding code for

2   determining a reference baseline of patient information for automated remote

3   patient care, comprising:

4   code for regularly recording and storing measures sets comprising

5   individual measures which each relate to patient information by a medical device

6   adapted to be implanted for an individual patient during an initial time period;

7   code for receiving the collected device measures set from the medical

8   device adapted to be implanted;

9   code for collecting one or more patient care records into a database,

10   comprising:

11   code for organizing one or more patient care records which each

12   comprise a plurality of the collected measures sets;

13   code for storing the collected measures set into a patient care

14   record for the individual patient within the database; and

15   code for processing the collected device measures set into a set of

16   reference measures, each reference measure being representative of at least one of

17   measured or derived patient information, and storing the reference measures set

18   into the patient care record as data in a reference baseline indicating an initial

19   patient status.

1   22.   A storage medium according to Claim 21, further comprising:

2   code for receiving a set of quality of life measures recorded by the

3   individual patient during the initial time period;

4   code for storing the collected quality of life measures set into the patient

5   care record for the individual patient within the database; and

6   code for assimilating the collected quality of life measures set into the

7   reference baseline data stored in the patient care record.

1   23.   A storage medium according to Claim 21, further comprising:

2   code for monitoring the individual patient using the medical device

3   adapted to be implanted while the individual patient is performing a prescribed set

4   of timed physical stressors during the initial time period.

1   24.   A storage medium according to Claim 21, further comprising:

2   code for reprogramming at least one of pacing interventions and pacing

3   modes of the medical device adapted to be implanted during the initial time

4   period; and

5   code for monitoring the individual patient using the medical device

6   adapted to be implanted subsequent to the reprogramming during the initial time

7   period.

1   25.   A storage medium according to Claim 21, further comprising:

2   code for receiving feedback recorded by the individual patient during the

3   initial time period;

4   code for storing the recorded feedback into the patient care record for the

5   individual patient within the database; and

6   code for assimilating the recorded feedback into the reference baseline

7   data stored in the patient care record.

1   26.   A storage medium according to Claim 21, further comprising:

2   code for defining a set of acceptance parameters with each acceptance

3   parameter corresponding to the same type of patient information to which at least

4   one of the reference measures relates;

5   code for analyzing the reference measures set for each patient care record

6   against the acceptance parameters set; and

7   code for identifying each patient care record storing a reference measures

8   set having at least one reference measure substantially non-conforming to the

9   corresponding acceptance parameter.

1   27.   A storage medium according to Claim 21, further comprising:

2   code for analyzing one or more collected device measures sets in the

3   patient care record for the individual patient relative to the reference measures

4   sets in the reference baseline to determine a patient status indicator.

1   28.   A storage medium according to Claim 21, further comprising:

2   code for analyzing one or more of the collected device measures sets in

3   the patient care record for the individual patient relative to one or more other

4   collected device measures sets stored in the database to further determine the

5   patient status indicator.

6   29.   A system for monitoring a patient status for using a reference

7   baseline for automated remote patient care, comprising:

8   a server, comprising:

9   a processing module processing a set of collected measures regularly

10   recorded by a medical device adapted to be implanted in an individual patient into

11   a set of reference measures and storing the reference measures set in a reference

12   baseline indicating an initial patient status, the collected device measures set

13   comprising individual measures which each relate to patient information recorded

14   by the medical device throughout an initial time period, each reference measure

15   being representative of at least one of measured or derived patient information;

16   and

17   an analysis module periodically receiving a set of collected measures from

18   the medical device, the collected device measures set comprising individual

19   measures which each relate to patient information recorded by the medical device

20   subsequent to the initial time period, and comparing one or more of the

21   subsequently collected device measures sets in the patient care record to the

22   reference measures set and identifying any such subsequently collected measure

23   substantially non-conforming to the corresponding reference measure; and

24   a database storing the patient care record, including the subsequently

25   collected device measures set into the patient care record for the individual

26   patient.

1   30.   A system according to Claim 29, the application server further

2   comprising:

3   an analysis module analyzing one or more of the subsequently collected

4   device measures sets in the patient care record for the individual patient relative to

5   one or more other subsequently collected device measures sets stored in the

6   database to determine a patient status indicator.

1   31.   A system according to Claim 29, the application server further

2   comprising:

3   a feedback module providing automated feedback based on the patient

4   status indicator to the individual patient over a feedback communications link

5   configured between the server and a feedback client.

1   32.   A system according to Claim 29, further comprising:

2   the server receiving initially feedback recorded by the individual patient

3   during the initial time period and receiving feedback recorded by the individual

4   patient subsequent to the initial time period;

5   the database storing the initially recorded feedback as reference feedback

6   into the patient care record for the individual patient within the database and

7   storing the subsequently recorded feedback into the patient care record for the

8   individual patient; and

9   the analyzing module comparing the subsequently recorded feedback to

10   the reference feedback in the patient care record and identifying any such

11   subsequently recorded feedback substantially non-conforming to the reference

12   feedback.

1   33.   A system according to Claim 32, wherein the patient feedback

2   comprises at least one of audio, digitized imagery, or video feedback.

1   34.   A system according to Claim 29, further comprising:

2   the application server further comprising a reevaluation module processing

3   a new set of collected measures recorded by a medical device adapted to be

4   implanted in an individual patient into a new set of reference measures, the new

5   collected device measures set comprising individual measures which each relate

6   to patient information recorded by the medical device adapted to be implanted

7   subsequent to the initial time period, each new reference measure being

8   representative of at least one of measured or derived patient information; and

9   the database storing the new reference measures set into the patient care

10   record as a new reference baseline indicating a revised patient status.

1   35.   A system according to Claim 29, further comprising:

2   the database storing an initial set of quality of life measures recorded by

3   the individual patient during the initial time period into the patient care record

4   within the database and storing a subsequently collected quality of life measures

5   set received by the server into the patient care record for the individual patient;

6   the application server assimilating the initial quality of life measures set

7   into the reference baseline data stored in the patient care record; and

8   the application server comparing one or more of the subsequently

9   collected quality of life measures to the initial quality of life measures in the

10   reference measures set and identifying any such subsequently collected quality of

11   life measure substantially non-conforming to the corresponding quality of life

12   reference measure.

1   36.   A system according to Claim 29, the application server further

2   comprising:

3   a monitoring module monitoring the individual patient using the medical

4   device adapted to be implanted while the individual patient is performing a

5   prescribed set of timed physical stressors during the initial time period.

1   37.   A system according to Claim 36, wherein the prescribed set of

2   activities are representative of substantially normal activity, further comprising:

3   the server determining relative abnormal activity response based on any

4   subsequently collected measure identified as being substantially non-conforming

5   to the corresponding reference measure.

1   38.   A system according to Claim 36, wherein the prescribed set of

2   activities are representative of substantially normal exercise, further comprising:

3   the server determining relative abnormal exercise response based on any

4   subsequently collected measure identified as being substantially non-conforming

5   to the corresponding reference measure.

1   39.   A system according to Claim 29, wherein the reference measures

2   set comprises at least one of the following: patient activity score, posture, atrial

3   electrical activity, ventricular electrical activity, cardiovascular pressures, cardiac

4   output, oxygenation, pulmonary measures, body temperature, PR interval, QRS

5   measures, QT interval, ST-T wave measures, potassium [K+] level, sodium [Na+]

6   level, glucose level, blood urea nitrogen and creatinine, acidity (pH) level,

7   hematocrit, hormonal levels, cardiac injury chemical tests, myocardial blood flow,

8   central nervous system injury chemical tests, central nervous system (CNS) blood

9   flow, and time of day and combinations and derivatives thereof.

1   40.   A method for monitoring a patient status for using a reference

2   baseline for automated remote patient care, comprising:

3   processing a set of collected measures regularly recorded by a medical

4   device adapted to be implanted in an individual patient into a set of reference

5   measures and storing the reference measures set in a reference baseline indicating

6   an initial patient status, the collected device measures set comprising individual

7   measures which each relate to patient information recorded by the medical device

8   throughout an initial time period, each reference measure being representative of

·9   at least one of measured or derived patient information;

10   periodically receiving a set of collected measures from the medical device,

11   the collected device measures set comprising individual measures which each

12   relate to patient information recorded by the medical device subsequent to the

13   initial time period;

14   comparing one or more of the subsequently collected device measures sets

15   in the patient care record to the reference measures set and identifying any such

16   subsequently collected measure substantially non-conforming to the

17   corresponding reference measure; and

18   storing the patient care record in a database, including the subsequently

19   collected device measures set into the patient care record for the individual

20   patient.

1   41.   A method according to Claim 40, further comprising:

2   analyzing one or more of the subsequently collected device measures sets

3   in the patient care record for the individual patient relative to one or more other

4   subsequently collected device measures sets stored in the database to determine a

5   patient status indicator.

1   42.   A method according to Claim 40, further comprising:

2   providing automated feedback based on the patient status indicator to the

3   individual patient over a feedback communications link configured between a

4   server and a feedback client.

1   43.   A method according to Claim 40, further comprising:

2   receiving feedback recorded by the individual patient during the initial

3   time period and storing the recorded feedback as reference feedback into the

4   patient care record for the individual patient within the database;

5   receiving feedback recorded by the individual patient subsequent to the

6   initial time period;

7   storing the subsequently recorded feedback into the patient care record for

8   the individual patient within the database; and

9   comparing the subsequently recorded feedback to the reference feedback

10   in the patient care record and identifying any such subsequently recorded

11   feedback substantially non-conforming to the reference feedback.

1   44.   A method according to Claim 43, wherein the patient feedback

2   comprises at least one of audio, digitized imagery, or video feedback.

1   45.   A method according to Claim 40, further comprising:

2   processing a new set of collected measures recorded by the medical device

3   into a new set of reference measures and storing the new reference measures set

4   into the patient care record as a new reference baseline indicating a revised patient

5   status, the new collected device measures set comprising individual measures

6   which each relate to patient information recorded by the medical device adapted

7   to be implanted subsequent to the initial time period, each new reference measure

8   being representative of at least one of measured or derived patient information.

1   46.   A method according to Claim 40, further comprising:

2   storing a set of quality of life measures recorded by the individual patient

3   during the initial time period into the patient care record and assimilating the

4   quality of life measures into the reference baseline data stored in the patient care

5   record;

6   receiving a quality of life measures set recorded by the individual patient

7   subsequent to the initial time period;

8   storing the subsequently collected quality of life measures set into the

9   patient care record for the individual patient within the database; and

10   comparing one or more of the subsequently collected quality of life

11   measures to the quality of life measures in the reference measures set and

12   identifying any such subsequently collected quality of life measure substantially

13   non-conforming to the corresponding quality of life reference measure.

1   47.   A method according to Claim 40, further comprising:

2   monitoring the individual patient using the medical device adapted to be

3   implanted while the individual patient is performing a prescribed set of timed

4   physical stressors during the initial time period.

1   48.   A method according to Claim 47, wherein the prescribed set of

2 activities are representative of substantially normal activity, further comprising:

3   determining relative abnormal activity response based on any

4 subsequently collected measure identified as being substantially non-conforming

5 to the corresponding reference measure.

1   49.   A method according to Claim 47, wherein the prescribed set of

2 activities are representative of substantially normal exercise, further comprising:

3   determining relative abnormal exercise response based on any

4 subsequently collected measure identified as being substantially non-conforming

5 to the corresponding reference measure.

1   50.   A method according to Claim 40, wherein the reference measures

2 set comprises at least one of the following: patient activity score, posture, atrial

3 electrical activity, ventricular electrical activity, cardiovascular pressures, cardiac

4 output, oxygenation, pulmonary measures, body temperature, PR interval, QRS

5 measures, QT interval, ST-T wave measures, potassium [K+] level, sodium [Na+]

6 level, glucose level, blood urea nitrogen and creatinine, acidity (pH) level,

7 hematocrit, hormonal levels, cardiac injury chemical tests, myocardial blood flow,

8 central nervous system injury chemical tests, central nervous system (CNS) blood

9 flow, and time of day and combinations and derivatives thereof.

1   51.   A computer-readable storage medium holding code for monitoring

2 a patient status for using a reference baseline for automated remote patient care,

3 comprising:

4   code for processing a set of collected measures regularly recorded by a

5 medical device adapted to be implanted in an individual patient into a set of

6 reference measures and storing the reference measures set in a reference baseline

7 indicating an initial patient status, the collected device measures set comprising

8 individual measures which each relate to patient information recorded by the

9 medical device throughout an initial time period, each reference measure being

10 representative of at least one of measured or derived patient information;

11   code for periodically receiving a set of collected measures from the

12   medical device, the collected device measures set comprising individual measures

13   which each relate to patient information recorded by the medical device

14   subsequent to the initial time period;

15   code for comparing one or more of the subsequently collected device

16   measures sets in the patient care record to the reference measures set and

17   identifying any such subsequently collected measure substantially non-

18   conforming to the corresponding reference measure; and

19   code for storing the patient care record in a database, including the

20   subsequently collected device measures set into the patient care record for the

21   individual patient.

1   52.   A storage medium according to Claim 51, further comprising:

2   code for analyzing one or more of the subsequently collected device

3   measures sets in the patient care record for the individual patient relative to one or

4   more other subsequently collected device measures sets stored in the database to

5   determine a patient status indicator.

1   53.   A storage medium according to Claim 51, further comprising:

2   code for providing automated feedback based on the patient status

3   indicator to the individual patient over a feedback communications link

4   configured between the server and a feedback client.

1   54.   A storage medium according to Claim 51, further comprising:

2   code for storing feedback recorded by the individual patient during the

3   initial time period which is interfaced to the server and storing the recorded

4   feedback as reference feedback into the patient care record for the individual

5   patient within the database;

6   code for receiving feedback recorded by the individual patient subsequent

7   to the initial time period which is interfaced to the server;

8   code for storing the subsequently recorded feedback into the patient care

9   record for the individual patient within the database; and

10   code for comparing the subsequently recorded feedback to the reference

11 feedback in the patient care record and identifying any such subsequently

12 recorded feedback substantially non-conforming to the reference feedback.

1   55. A storage medium according to Claim 51, further comprising:

2   code for processing a new set of collected measures recorded by a medical

3 device adapted to be implanted in an individual patient into a new set of reference

4 measures and storing the new reference measures set into the patient care record

5 as a new reference baseline indicating a revised patient status, the new collected

6 device measures set comprising individual measures which each relate to patient

7 information recorded by the medical device adapted to be implanted subsequent

8 to the initial time period, each new reference measure being representative of at

9 least one of measured or derived patient information.

1   56. A storage medium according to Claim 51, further comprising:

2   code for storing a set of quality of life measures recorded by the individual

3 patient during the initial time period into the patient care record and assimilating

4 the quality of life measures into the reference baseline data stored in the patient

5 care record;

6   code for receiving a quality of life measures set recorded by the individual

7 patient subsequent to the initial time period which is interfaced to the server;

8   code for storing the subsequently collected quality of life measures set into

9 the patient care record for the individual patient within the database; and

10   code for comparing one or more of the subsequently collected quality of

11 life measures to the quality of life measures in the reference measures set and

12 identifying any such subsequently collected quality of life measure substantially

13 non-conforming to the corresponding quality of life reference measure.

1   57. A storage medium according to Claim 51, further comprising:

2   code for monitoring the individual patient using the medical device while

3 the individual patient is performing a prescribed set of timed physical stressors

4 during the initial time period.

1   58.   A storage medium according to Claim 57, wherein the prescribed
2 set of activities are representative of substantially normal activity, further
3 comprising:
4   code for determining relative abnormal activity response based on any
5 subsequently collected measure identified as being substantially non-conforming
6 to the corresponding reference measure.

1   59.   A storage medium according to Claim 57, wherein the prescribed
2 set of activities are representative of substantially normal exercise, further
3 comprising:
4   code for determining relative abnormal exercise response based on any
5 subsequently collected measure identified as being substantially non-conforming
6 to the corresponding reference measure.